Name(s): Date: Class Period:

**The Mystery from Planet Xenon**

You are a member of a biology research team that has found a mysterious white powder on planet Xenon. The powder needs to undergo testing right away, so a lab member takes a sample to the lab and begins. While testing, a strange thing occurs! The white powder that you have found changes in a way no one can explain. How can this be so? It is your job to figure out the mystery to why and how the substance has changed. Read the steps below to help you figure out the answer. Good Luck!

**Pre-lab Questions**

1. Discuss with your partner what the difference between diffusion and osmosis is and write your answer below.

2. What does the term selectively permeable mean?

3. Molecules tend to move from areas of \_\_\_\_\_\_\_ concentration to areas of \_\_\_\_\_\_ concentration.

**Procedure**:

1. Dialysis bags will be pre-soaked in a water solution by the teacher. Get two bags and tie one end of each with the string tightly.

2. Fill one bag with a teaspoon of the mysterious white powder and the other bag with your known powder. Put 5 ml of water in each and then tie the bags tightly.

3. Fill each beaker halfway with water and add 20 drops of iodine to each.

4. Place each bag in the beakers so that the powder & water mixture is submerged in the water and iodine mixture.

5. Now, put your experiment to the side and answer the questions in your lab packet for about 15 min. Continue to check on your beakers from time to time and write your observations in the data table below:

1. Make a hypothesis about what will happen to the mystery white powder and water solution after it is placed in the iodine and water solution.

2. Do you think the mystery powder has smaller or larger molecules than the iodine? What about the known powder and the iodine?

3. As you are watching your experiment, why do you think you are/are not seeing changes?

Mystery Powder Chart

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Starting Color | After 5 min | After 10 min | After 15 min |
| Solution in Beaker |  |  |  |  |
| Solution in Baggie |  |  |  |  |

Known Powder Chart

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Starting Color | After 5 min | After 10 min | After 15 min |
| Solution in Beaker |  |  |  |  |
| Solution in Baggie |  |  |  |  |

Lab Group Data of Known Powder’s

|  |  |  |
| --- | --- | --- |
| Group Names | Known Powder | Observations |
|  |  |  |
|  |  |  |
|  |  |  |

**Post-Lab Questions**

1. Summarize your findings from the tables you completed above.

2. Based on your observations, which substance moved? The iodine or the white powder? Why?

3. What is the white powder in the baggie?

4. Which substance was the baggie permeable to?

5. Why is iodine added to the water in the beakers?

6. Why is iodine considered an “indicator”?

7. Draw the baggie and the beaker experiment below of ONLY the mystery powder and water solution and draw arrows to show the flow of substances. \*\*Label your arrows.

8. What would happen if you did an experiment in which the iodine solution was placed in the baggie and the white powder with water solution was in the beaker?